We claim:

1. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate comprising an N-propionated polysaccharide or N-propionated oligosaccharide directly conjugated to a protein at the ß-position of the propionate moiety.

2. A polysaccharide-protein conjugate according to claim 1 wherein the protein comprises at least one lysine or cysteine residue.

3. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the polysaccharide or oligosaccharide is derived from bacteria, yeast, cancer cells, or chemically synthesized.

4. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the polysaccharide or oligosaccharide is derived from *Escherichia coli*, Meningococcus, Pneumococcus, Streptococcus, Haemophilus, Neisseria, Salmonella, Klebsiella, or Pseudomonas.

5. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the polysaccharide or oligosaccharide is derived from Group B streptococcus selected from the group consisting of serotype Ia, serotype Ib, serotype II, serotype III, serotype V, serotype VIII, and combinations thereof.

6. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 4 wherein the polysaccharide or oligosaccharide is derived from a Meningococcus group selected from the group consisting of group B, group C, group Y, group W135, and combinations thereof.

7. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 4 wherein the polysaccharide or oligosaccharide is derived from *E. coli* K1, *E. coli* K92, Pneumococcus type 4, Pneumococcus type 14, Streptococcus group A, Streptococcus group C, or combinations thereof.

8. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the protein is selected from the group consisting of tetanus toxoid, diphtheria toxoid, a *Neisseria meningitidis* outer membrane protein, pneumolysoid, C-β protein from group B *Sreptococcus* and non-IgA-binding C-ß protein from group B *Streptococcus*.

9. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 8 wherein the protein is recombinantly produced.

10. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 9 wherein the protein is recombinant *N. meningitidis* outer membrane protein.

11. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the polysaccharide or oligosaccharide comprises a glycosaminoglycan.

12. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the polysaccharide or oligosaccharide comprises glycosyl residues of a structural repeating unit having at least one free amino group or N-acyl group.

13. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 12 wherein the glycosyl residue is selected from the group consisting of glucosamine, galactosamine, mannosamine, fucosamine and sialic acid.

14. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 wherein the N-propionated polysaccharide or N-propionated oligosaccharide is directly conjugated to an ε-free amino group of a lysine residue or a thiol group of a cysteine residue of the protein.

15. A polysaccharide-protein conjugate comprising N-propionated *Streptococcus pneumoniae* type 14 polysaccharide-tetanus toxoid conjugate, N-propionated Group B streptococcus type III polysaccharide-tetanus toxoid conjugate, N-propionated Group B Streptococcus type II polysaccharide-tetanus toxoid conjugate, N-propionated *E. coli* K1 polysaccharide-protein conjugate, or N-propionated meningococcal C polysaccharide-tetanus toxoid conjugate.

16. A polysaccharide-protein conjugate or oligosaccharide-protein conjugate produced by a method comprising:

A) de-N-acetylating an isolated polysaccharide or oligosaccharide using a de-N-acetylating reagent to form a de-N-acetylated polysaccharide or a de-N-acetylated oligosaccharide,

B) N-acryloylating the de-N-acetylated polysaccharide or the de-N-acetylated oligosaccharide with an acryloylating reagent to form an N-propionated polysaccharide or an N-propionated oligosaccharide, and

C) directly conjugating the N-propionated polysaccharide or an N-propionated oligosaccharide to a protein to form the polysaccharide-protein conjugate or the oligosaccharide protein conjugate.

17. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 16 wherein the polysaccharide or oligosaccharide is derived from bacteria, yeast, cancer cells or chemical synthesis.

18. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate of claim 16 wherein the conjugation is conducted at a pH of about 7.0.

19. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate of claim 16 wherein the conjugation is conducted at a pH above 9.

20. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate of claim 16 wherein the conjugation is conducted in a reagent selected from the group consisting of phosphate, carbonate/bicarbonate buffer and borate buffer.

21. The polysaccharide-protein conjugate or oligosaccharide-protein conjugate of claim 16 wherein the de-N-acetylating reagent is a base or an enzyme and the acryloylating reagent is selected from the group consisting of N-acryloyl chloride, acryloyl anhydride, acrylic acid and a dehydrating agent.

22. A pharmaceutical composition comprising the polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claims 1 or 16 and a pharmaceutically acceptable carrier.

23. The pharmaceutical composition according to claim 22 further comprising an adjuvant.

24. The pharmaceutical composition according to claim 23 wherein the adjuvant is selected from the group consisting of alum or stearyl tyrosine.

25. The pharmaceutical composition according to claim 22 further comprising a second component, said second component selected from the group consisting of DTP, DTaP, Td, DTaP-Hib, DTaP-IPV-Hib, and combinations thereof.

26. A immunogen comprising the polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claims 1 or 16, said immunogen elicits a polysaccharide-specific or an oligosaccharide-specific immune response.

27. The immunogen according to claim 26, wherein the immune response is generation of polysaccharide-specific or an oligosaccharide-specific immunoglobulin.

28. The immunogen according to claim 27 wherein the immunoglobulin is IgG, IgM, IgA or combinations thereof.

29. A method of making a ß-propionamido-linked polysaccharide-protein conjugate or a ß-propionamido-linked oligosaccharide-protein conjugate comprising:

A) de-N-acetylating a polysaccharide or an oligosaccharide using a de-N-acetylating reagent to form a de-N-acetylated polysaccharide or de-N-acetylated oligosaccharide,

B) N-acryloylating the de-N-acetylated polysaccharide or de-N-acetylated oligosaccharide with an acryloylating reagent to form a ß-propionated polysaccharide or a β-propionated oligosaccharide, and

C) directly conjugating the ß-propionated polysaccharide or the ß-propionamido oligosaccharide to a protein to form the ß-propionamido-linked polysaccharide-protein or ß-propionamido-linked oligosaccharide-protein conjugate conjugate.

30. The method of claim 29, wherein the de-N-acetylating reagent is a base or enzyme.

31. The method of claim 29 wherein the de-N-acetylating reagent is selected from the group consisting of NaOH, KOH and KiOH.

32. The method of claim 29, wherein the acryloylating reagent is selected from the group consisting of acryloyl chloride, acryloyl anhydride, acrylic acid and a dehydrating agent.

33. The method of claim 29, wherein the polysaccharide or oligosaccharide is derived from bacteria, yeast, cancer cells or chemical synthesis.

34. The method of claim 29 wherein the polysaccharide or oligosaccharide is derived from *Escherichia coli*, Meningococcus, Pneumococcus, Streptococcus, Haemophilus, Neisseria, Salmonella, Klebsiella, or Pseudomonas.

35. The method of claim 29 wherein the protein is selected from the group consisting of tetanus toxoid, diphtheria toxoid, a neisserial outer membrane protein, pneumolysoid, and C-β protein from group B Streptococcus and non-IgA binding C-β protein from group B Streptococcus.

36. The method of Claim 35, wherein the protein is recombinantly produced.

37. A vaccine comprising the polysaccharide-protein conjugate or oligosaccharide-protein conjugate according to claim 1 or 16, wherein said vaccine provides protective immunity against a disease causing organism or cell.

38. A vaccine according to claim 37 wherein the disease causing organism or cell is selected from the group consisting of bacteria, yeast, and cancer cell.

39. A vaccine according to claim 38 wherein the bacteria is *Escherichia coli*, Meningococcus, Pneumococcus, Streptococcus, Haemophilus, Neisseria, Salmonella, Klebsiella, or Pseudomonas.

40. A vaccine according to claim 37 further comprising a second immunogen in combination with the polysacharide-protein conjugate or oligosaccharide-protein conjugate said second immunogen selected from the group consisting of DTP, DTaP, Td, DTaP, Hib, DTaP-IPV-Hib and combinations thereof.

41. A method of immunizing a mammal against a disease causing organism or disease causing cell comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

42. A method of immunizing a mammal against *Streptococcus pneumoniae* comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

43. A method of immunizing a mammal against Group B Streptococcus comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

44. A method of immunizing a mammal against Group B *Neisseria meningitidis* comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

45. A method of immunizing a mammal against Group C *Neisseria meningitidis* comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

46. A method of immunizing a mammal against *Haemophilus influenzae* type B comprising administering to the mammal an immunizing amount of the vaccine according to claim 37.

47. A method of eliciting an antibody response to a polysaccharide or an oligosaccharide in a mammal comprising administering of an effective amount of the polysaccharide-protein conjugate or oligosaccharide-protein conjugate of claim 1 or 16.

48. An immunoglobulin or antigen-binding fragment thereof produced according to the method of claim 47.

49. The immunoglobulin according to claim 48, selected from the group consisting of IgG antibody, IgM antibody, IgA antibody and combinations thereof.

50. The immunoglobulin according to claim 49, wherein the antibody is an isolated IgG.

51. An isolated antibody or antigen binding fragment thereof elicited in response to the ß-propionamido-linked polysaccharide-protein conjugate or ß-propionamido-linked oligosaccharide-protein conjugate according to claim 1 and 16, said antibody or antigen fragment thereof specifically immunoreactive with N-propionated polysaccharide or N-propionated oligosaccharide and immunoreactive with a native N-acetylated polysaccharide from which the ß-propionated polysaccharide or β-propionated oligosaccharide was derived.

52. The antibody or antigen binding fragment thereof according to claim 51 wherein the native N-acetylated polysaccharide is a component of bacteria, yeast or cancer cells.

53. The antibody or antigen binding fragment thereof according a claim 52 wherein the polysaccharide is derived from *Escherichia coli,*

Meningococcus, Pneumococcus, Streptococcus, Haemophilus, Neisseria, Salmonella, Klebsiella, or Pseudomonas.

54. The antibody or antigen binding fragment thereof according to claim 51 wherein the antibody is recombinantly produced.

55. A method of passive immunization against a disease causing organism or disease causing cells comprising administration of an effective amount of the immunoglobulin or antibody according to claim 48 or 51, said amount is sufficient to inhibit or kill the disease causing organism or disease causing cells.

56. The method of passive immunization according to claim 55 wherein the immunoglobulin is an isolated IgG antibody or antigen binding fragment thereof.

57. The method of passive immunization according to claim 55 wherein the immunoglobulin is an isolated IgM antibody or antigen binding fragment thereof.

58. The method of passive immunization according to claim 55 whrein the immunoglobulin is an isolated IgA antibody or antigen binding fragment thereof.